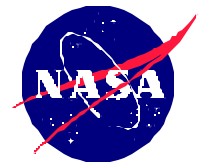


National Aeronautics and
Space Administration

Office of Inspector General
Headquarters
Washington, D.C. 20546-0001



Reply to Attn of: Office of Inspector General

June 23, 2000

The Honorable F. James Sensenbrenner, Jr.
Chairman, Committee on Science
U.S. House of Representatives
Suite 2320, Rayburn House Office Building
Washington, DC 20515-6301

Dear Mr. Chairman:

In response to your April 11, 2000, letter (See Appendix A), my office reviewed NASA's proposed sole source procurement to the Johns Hopkins University Applied Physics Laboratory (APL) for services in support of NASA's Sun-Earth Connection Theme (SEC), including the Living With a Star initiative (LWS).

We found that there is insufficient justification for NASA's decision to award this contract on a sole source basis to APL. Furthermore, contrary to Agency policy, NASA did not perform a cost/benefit analysis of the proposed arrangement.

I. BACKGROUND

NASA has a long history of studying the Sun and the Sun's effects on the Earth and space. The Agency is currently operating or participating in 14 missions that study the Sun and its effects. Six additional missions are in development.¹

The President's proposed Fiscal Year 2001 (FY 01) NASA budget, released February 8, 2000, includes a new initiative titled Living With a Star. This initiative is intended to enhance existing programs designed to study the Sun and its effects on humanity. The President's budget proposed FY 01 funding of \$20 million for LWS, with a 5-year estimated run-out cost of \$500 million. The major planned elements of the LWS program are to: (1) accelerate NASA's Solar Terrestrial Probes program; (2) establish a space weather research network; (3) conduct targeted data analysis and modeling to exploit data from present and past missions; (4) establish space environment test beds; and (5) establish and expand partnerships, including contributing to the National Space Weather Program.

¹ http://sec.gsfc.nasa.gov/sec_missions.htm

On February 16, 2000, NASA's Goddard Space Flight Center (Goddard) published a notice in the *Commerce Business Daily* (CBD) announcing its intent to award a contract to APL on a sole source basis for services in support of SEC/LWS (See Appendix B). The proposed contract would provide for services for the pre-formulation, formulation, and implementation of selected missions in support of NASA's SEC/LWS. The contract is anticipated to run for 12 years with an estimated total value of \$600 million.

APL is a not-for-profit division of the Johns Hopkins University and is located in Laurel, Maryland. APL employs approximately 2,800 engineers, scientists, and supporting staff in a broad range of disciplines. Major customers include the Navy, Army, Air Force, NASA, Defense Advanced Research Projects Agency, and the Departments of Transportation and Treasury. Since 1959, APL engineers and scientists have designed, built, and launched 58 spacecraft and 136 instruments.

II. APPLICABLE STANDARDS

Competition is a proven and effective means of acquiring supplies and services. The competitive forces of the marketplace can result in lower prices, better products, safe and effective performance, and can also provide innovative, commercial solutions to meet NASA's needs. The Federal Government's policy is clear – full and open competition shall be used whenever possible to fulfill the Government's requirements efficiently, effectively, and at a fair and reasonable cost. Contracting without providing for full and open competition is a violation of statute, unless permitted by one of the specific exceptions set forth in the Federal Acquisition Regulation (FAR).²

As the statutory authority for contracting without full and open competition for this procurement, NASA is citing Title 10 United States Code 2304(c)(3), as implemented by FAR 6.302-3(a)(2)(ii). This exception states that competition is not necessary when the contract must be awarded to a particular source or sources in order to “establish or maintain an essential engineering, research, or development capability to be provided by an educational or other nonprofit institution or a federally funded research and development center.”³ The FAR requires the Agency to develop a written justification to support its rationale for citing this statutory authority.⁴ The current draft of this justification states that APL possesses essential capabilities that must be maintained because they are critical to NASA's mission. NASA is not asserting that APL is the only source capable of meeting its requirement (See Section IV.A for a discussion of NASA's justification).

² Subpart 6.3 of the FAR prescribes policies and procedures and identifies the specific statutory authorities for contracting without providing for full and open competition.

³ FAR 6.302-3(b)(2) states that use of this exception may be appropriate, “when it is necessary to: (i) establish or maintain an essential capability for theoretical analyses, exploratory studies, or experiments in any field of science or technology; (ii) establish or maintain an essential capability for engineering or developmental work calling for the practical application of investigative findings and theories of a scientific or technical nature; or (iii) contract for supplies or services as are necessary incident to paragraphs (i) or (ii) above.”

⁴ FAR 6.302-3(c).

NASA is required by policy to perform cost/benefit analyses in the process of considering issues related to consolidation, downsizing, outsourcing, or research/program elimination.⁵ This policy states that in order for NASA to meet its goals, the Agency must make decisions based on the best information available and that independent and up-front cost/benefit analyses must be a key element in NASA's decision-making process. The need for conducting benefit-cost and cost-effectiveness analyses is also the focus of Office of Management and Budget (OMB) Circular A-94, *Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs*. This circular applies to all agencies of the Executive Branch of the Government and is intended to promote efficient resource allocation through well-informed decision making.

III. REVIEW METHODOLOGY

We reviewed documents concerning the proposed procurement, including the following:

- February 16, 2000, CBD notice concerning "Services Under the Sun Earth Connection Theme"
- Responses to the CBD notice
- Goddard Ombudsman's reply to the CBD respondents
- Draft justification document for the procurement
- Draft "roles and responsibilities" agreement, which is currently being jointly drafted by NASA and APL
- Pertinent sections of the FAR
- Pertinent documentation provided by the Navy Office of University Affiliated Research Center (UARC) Programs
- General Accounting Office (GAO) Letter Report *Federally Funded R&D Centers: Issues Relating to the Management of DoD-Sponsored Centers* (Report No. GAO/NSIAD-96-112 dated August 6, 1996)
- Department of Defense (DoD) Office of Inspector General (OIG) audit reports *Navy Proposed Follow-on Research and Development Contract for Johns Hopkins University Applied Physics Laboratory* (Report No. 95-001 dated October 3, 1994) and *Navy Research and Development Contract for Johns Hopkins University Applied Physics Laboratory* (Report No. 96-050 dated December 21, 1995)

In addition, we interviewed numerous individuals who could provide insight into this procurement activity.

⁵ This Agency policy is set forth in a memorandum from the Acting NASA Deputy Administrator to all senior NASA officials dated March 13, 1997 (See Appendix C).

IV. FINDINGS

Our review of the proposed procurement action resulted in the following findings: (A) there is insufficient justification for precluding full and open competition based on NASA's need to maintain essential capabilities at APL and (B) NASA did not perform a cost/benefit analysis of the proposed arrangement.

A. Insufficient Justification for Precluding Full and Open Competition

Our review did not find sufficient justification for conducting a sole source procurement on the basis that NASA needs to maintain essential capabilities at APL.

1. NASA's description of APL's essential capabilities related to SEC/LWS is vague and inconsistent

NASA's rationale for contracting with APL on a sole source basis for support of SEC/LWS is that the Agency needs to "maintain an essential engineering, research, or development capability to be provided by an educational or other nonprofit institution or a federally funded research or development center." However, the documentation we reviewed and the interviews we conducted provided only a vague and inconsistent explanation of exactly what these essential capabilities are and why they need to be maintained at APL. According to the NASA's written justification, the essential capabilities to be maintained at APL are:

- The ability to conceive, design, and prototype space systems and instruments for precision tracking, location, and navigation systems and for communications; establish relevant aspects of the space environment; conduct critical space experiments as appropriate; and accomplish remote sensing of the earth's surface
- The ability to develop and apply simulations and models and operations analysis techniques for the engineering evaluation and performance assessment for current, planned, and proposed systems and methods for coordinated employment of systems
- The ability to conduct mission-related, public-service-oriented research and technology development consistent with the foregoing essential capabilities
- The ability to provide research and development resources to solve complex project management technical and system level problems
- The ability to provide independent evaluations required while at the same time working closely with industry, including the transition of technology to industry

The first three essential capabilities cited by NASA are drawn from the list of essential capabilities identified by the Navy in its contract with APL.⁶ The last two essential

⁶ Some of the capabilities drawn from the Navy list (e.g., tracking, location, and navigation systems) appear to be at best marginally related to SEC/LWS missions.

capabilities are identified as being specific to NASA. None of these capabilities are unique to APL. Several NASA officials indicated that other organizations (or partnerships of multiple organizations) could provide such capabilities.

We identified inconsistencies between the essential capabilities as described in the draft written justification and those identified by NASA officials during our interviews. We asked each interviewee to identify the specific essential capabilities that needed to be maintained at APL. In almost all cases, the capabilities that were cited in response to this question were not directly related to the capabilities stated in the written justification. The interviewees focused on APL's heritage as an organization that has successfully provided products and services to Goddard in the past. The general response among NASA officials was that NASA needed APL to undertake this effort for the following reasons:

- NASA lacks the civil servant resources to manage the entire effort in-house and requires contractor support to augment its staff⁷
- APL is in close physical proximity to Goddard (approximately 15 miles away) making it a logical choice to supplement Goddard's capabilities for managing SEC/LWS
- APL has many core technical staff and facilities in place and has the ability to easily obtain additional resources necessary to support SEC/LWS
- APL previously managed many NASA projects successfully
- Goddard and APL share compatible project management philosophies and approaches

APL's strengths as an organization are understandably valuable to NASA; however, they do not appropriately justify NASA's decision to preclude full and open competition on the basis of the need to maintain essential capabilities at APL.

We were told that NASA intends to determine whether APL's essential capabilities are being maintained by monitoring the staffing levels in APL's Space Department.⁸ NASA's decision to assign new SEC/LWS missions to APL under the contract would be determined in part by these staffing levels. If APL's staffing level fell below the lower limit of an established range, NASA would seek to award additional work to APL that would be within the scope of the contract and would otherwise be appropriate to contract out.⁹ If APL's staffing level

⁷ NASA officials indicated that hiring additional civil servants was an approach they considered, but this alternative was deemed infeasible because of Agency limits on the number of civil servants at Goddard.

⁸ NASA officials indicated that this is a preliminary concept and is likely to evolve and become further refined as the Procurement Development Team activities continue.

⁹ We were told that this "minimum target" would not constitute a contractual obligation for the Government, but rather would be a goal that the NASA and APL would jointly strive to maintain.

exceeded the upper limit of this range, NASA would not assign any new missions to APL under the contract.¹⁰

We recognize that NASA's Procurement Development Team is still in the preliminary stages of structuring the contract to APL and is attempting to set boundaries on the scope of APL work under the proposed contract. However, staffing level is an inadequate measurement of essential capabilities. A simple measurement of staff levels does not identify the specific nature of the essential capabilities that need to be maintained. Specifically, there is no consideration of skill mix or the areas of scientific disciplines or engineering expertise necessary to carry out the proposed program.

2. There is no evidence to suggest that APL's existing capabilities are at risk

Information we gathered during our review indicates that APL's existing and projected business base is sufficient to maintain its capabilities without NASA's proposed sole source procurement for support of SEC/LWS. APL's space systems business from NASA, the Navy, and the commercial sector shows no evidence of declining. Should APL receive the proposed award of the SEC/LWS program, their projected staffing levels are expected to increase significantly.

NASA currently has two contracts and numerous active grants with APL, representing a total value over \$600 million. Three NASA space missions (TIMED¹¹, STEREO¹², and MESSENGER¹³) provided for under these contracts. APL's support from the Navy, which was significantly reduced in the late 1990's, is increasing again and is expected to increase even more if the decision is made to pursue research and development of the strategic missile defense initiative. APL also appears to be aggressively pursuing additional commercial business (See Appendix D for additional details).

B. NASA Did Not Perform a Cost/Benefit Analysis as Required by Agency Policy

NASA is required to perform cost/benefit analyses in the process of considering issues related to consolidation, downsizing, outsourcing, or research/program elimination (See Appendix C). This policy memorandum states that in order for NASA to meet its goals, the Agency must make decisions based on the best information available and that independent and up-

¹⁰ Although they would be precluded from receiving any additional work on a sole source basis under the contract, APL would still be able to compete for new NASA work under other competitive procurements.

¹¹ TIMED is an acronym for Thermosphere Ionosphere Mesosphere Energetics and Dynamics. TIMED is a mission to study the upper regions of the atmosphere to better understand the influence of the Sun and human activities on the atmosphere and to improve space weather predictions.

¹² STEREO is an acronym for Solar Terrestrial Relations Observatory. STEREO is a mission under the SEC Theme to study the Sun in three dimensions.

¹³ MESSENGER is an acronym for Mercury Surface, Space Environment, Geochemistry and Ranging. The MESSENGER spacecraft is scheduled to be launched in 2004 on a mission to orbit the planet Mercury.

front cost/benefit analyses must be a key element in NASA's decision-making process. The memorandum further states:

These analyses should represent a thorough review of the requirement, identifying the costs and benefits of major decisions. These analyses are particularly important where there is a potential impact on safety, where there are high anticipated costs or benefits, and where NASA has indications that the decision has a high level of external interest. This will provide us the opportunity to articulate intangible, or hard to quantify, organizational or programmatic benefits. All NASA offices are expected to perform these analyses in a reasonable and timely manner. These analyses should be of sufficient rigor to provide management with the information it needs to make the best decisions as well as withstand the scrutiny of others.

We found that no cost/benefit analysis was performed relating to NASA's decision to significantly alter its program management approach regarding SEC/LWS or its related decision to sole source the support effort to APL. Also, there was no formal assessment of the cost effectiveness of the proposed arrangement. Finally, there was no formal assessment of APL's overall past performance under other previous and current contracts with NASA and other Government agencies.

V. CONCLUSION

We found that there is insufficient justification for NASA's decision to award this contract on a sole source basis to APL. Furthermore, contrary to Agency policy, NASA did not perform a cost/benefit analysis of the proposed arrangement.

NASA did not consider any other procurement approaches for meeting its requirements for support of SEC/LWS. Although APL is a Navy-sponsored UARC, there is no restriction placed upon the Laboratory that prohibits it from competing for this procurement under full and open competitive procurement procedures.

We hope this information fully responds to your inquiry. Should you or your staff want to discuss these issues further, please feel free to call me at (202) 358-1220.

Sincerely,



Roberta L. Gross
Inspector General

4 Enclosures

Appendix A: Letter Requesting OIG Review

Appendix B: CBD Notice “Services Under the Sun-Earth Connection Theme”

Appendix C: Memorandum from NASA Deputy Administrator Regarding NASA’s Policy of
Conducting Cost/Benefit Analyses

Appendix D: APL Existing and Projected Business Base

Appendix A

Letter Requesting OIG Review

[illegible][illegible]

April 11, 2000

FJS/egl⁺

Appendix B

CBD Notice “Services Under the Sun-Earth Connection Theme”

SERVICES UNDER THE SUN EARTH CONNECTION THEME

General Information

Solicitation Number: N/A
Reference Number: RFP5-00000-013
NAIS Posted Date: Feb 16, 2000
CBDNet Posted Date: Feb 16, 2000
Response Date: N/A
Classification Code: A -- Research and Development

Contracting Office Address

NASA/Goddard Space Flight Center, Code 214.4, Greenbelt, MD 20771

Description

This is a notice to award a contract on a sole source basis to the Johns Hopkins University, Applied Physics Laboratory (APL) for services for the Pre-Formulation, Formulation, and Implementation of selected missions under NASA's Office of Space Science (OSS) Sun Earth Connection (SEC) Theme, including the Living with a Star Initiative. The SEC theme is aimed at improving mankind's understanding of the origins of solar variability, how that variability transforms the interplanetary medium, how eruptive events of the sun impact geospace, and how they might affect climate and weather. The JHU/APL responsibility under the proposed contract will be for enabling activities (pre-formulation) for technology development, trade studies, and maturing requirements for measurements needed in support of SEC; the defining of requirements (formulation); and support in the development phase (implementation). More specifically, the proposed contract will require JHU/APL to provide system overview/technical integration of the assigned SEC mission set; spacecraft definition and/or development; instrument interface coordination and definition, including when required, the award of subcontracts for mission systems such as spacecraft and ground systems as well as directed subcontracts resulting from Announcements of Opportunity selections; and detailed plans for the development of spacecraft and ground systems, including cost estimates, implementation plans, and technical documentation.

The statutory authority permitting other than full and open competition is 10 U.S.C. 2304(c)(3), to maintain an essential engineering, research and development capability to be provided by an educational or other nonprofit institution. More specifically, NASA requires that NASA-related essential capabilities be maintained, as authorized in FAR 6.302-3(b)(2)(ii), for theoretical analyses, exploratory studies, and experiments in science and technology as it relates to measurement campaigns planned over a 12-year period to provide a variety of observations through the Solar System. In addition, NASA requires essential capabilities provided by JHU/APL in the engineering and development work associated with investigative findings and theories of a scientific nature for a set of coordinated campaign missions that will focus on studying the Sun, heliosphere, and geosphere as an interacting system; that will explore the extreme boundaries of the heliosphere; that will investigate the interaction of the Sun and other planets; and that will develop new technologies. JHU/APL, through extensive experience with NASA programs particularly

related to the needs of the SEC program, has heritage and infrastructure capability that is crucial to planning, development, and understanding of the SEC initiative. JHU/APL's capability and understanding must be maintained to enable mission concepts to have an orderly progression of increasing levels of scope and scientific and technical challenges so that knowledge already gained is not lost, potentially interfering with critical mission timelines. Essential engineering, research and development capabilities that are related NASA needs consist of diverse technical and programmatic staff skills, extensive experience with NASA programs, extensive corporate memory, JHU/APL's access to JHU's pool of experts, broad industry interactions, substantial supporting facilities, and JHU/APL's ability to draw on research and development resources to solve complex technical and system level problems. The capabilities sought to be maintained include JHU/APL's ability to provide independent evaluation required by NASA while at the same time working closely with industry, including the transition of the technology to industry. Essential capabilities to be maintained through this procurement include expertise in overall spacecraft mission design, analysis; spacecraft instrument interfaces including electrical, mechanical, and thermal; instrument operability issues; spacecraft conceptual design; spacecraft and ground systems development; software for operations and data analysis; and mission integration and operations.

Interested firms desiring consideration have 15 days from publication in the Commerce Business Daily (CBD) to submit their qualifications/capabilities. Such qualifications/capabilities will be used solely for the purpose of determining whether or not to conduct this procurement on a competitive basis. Responses received after 15 days without the required information will be considered nonresponsive to the synopsis and will not be considered. A determination by the Government not to compete this proposed contract on a full and open competition basis based upon responses to this notice is solely within the discretion of the Government.

All responsible sources may submit a proposal which shall be considered by the agency.

An Ombudsman has been appointed, see Internet Note "B."

See Note 22. Any referenced notes can be viewed at the following URL:
<http://genesis.gsfc.nasa.gov/nasanote.html>

Point of Contact

Name: Thomas Russell
Title: Contracting Officer
Phone: (301)286-2885
Fax: (301)286-0341
Email: Thomas.S.Russell.1@gsfc.nasa.gov

Government-wide Notes

NASA-Specific Notes

You may return to Business Opportunities at:

- NASA GSFC listed by [[Posted Date](#) | [Classification Code](#)]
- NASA Agencywide listed by [[Posted Date](#) | [Classification Code](#)]

Appendix C

Memorandum from NASA Deputy Administrator Regarding NASA's Policy of Conducting Cost/Benefit Analyses

National Aeronautics and
Space Administration
Office of the Administrator
Washington, DC 20546-0001



MAR 13 1997

TO: Officials-in-Charge of Headquarters Offices
Directors, NASA Field Installations
Director, Jet Propulsion Laboratory

FROM: AD/Acting Deputy Administrator

SUBJECT: Cost/Benefit Analyses

NASA is in the process of considering issues related to consolidation, downsizing, outsourcing, and research/program elimination. We are committed to a NASA that works better and offers the American taxpayer more for their money. To meet our goals, we must make decisions based on the best information available.

A key element in our decisionmaking must be independent, upfront cost/benefit analyses. These analyses should represent a thorough review of the requirement, identifying the costs and benefits of major decisions. These analyses are particularly important where there is a potential impact on safety, where there are high anticipated costs or benefits, and where NASA has indications that the decision has a high level of external interest. This will provide us the opportunity to articulate intangible, or hard to quantify, organizational or programmatic benefits.

All NASA offices are expected to perform these analyses in a reasonable and timely manner. The analyses should be of sufficient rigor to provide management with the information it needs to make the best decisions as well as withstand the scrutiny of others. The Strategic Management Handbook outlines the process required to obtain management review and approval, and it is expected that we will employ with these procedures as our standard approach.


J. R. Dailey

Appendix D

APL Existing and Projected Business Base

I. NASA BUSINESS

Prior to 1997, NASA obtained general aerospace support from APL through a Navy contract.¹ However, in part due to two DoD OIG reports (see citations in Section III), the Navy decided to discontinue allowing other agencies to use its contract. The Navy was concerned about the manner in which other agencies were using its contract to obtain sole source support that should have been openly competed.

In October 1997, NASA awarded its own separate contract² to APL for the continuation of the services it had previously obtained under the Navy contract. NASA cited the need to “maintain essential capabilities” at APL as the basis for this sole source contract.³ At the time this contract was established, the contract only provided for the continuation of the tasks that had been under the Navy contract. The total value of these tasks was approximately \$65 million. NASA subsequently issued 21 additional tasks valued at approximately \$135 million under this contract – 7 were awarded to APL using competitive procurement procedures⁴ and 14 were awarded without competition.⁵

NASA’s general aerospace contract has an established maximum value of \$500 million and does not expire until May 2002. Although the current obligations under this contract total only \$200 million, NASA anticipates adding some additional tasks under the contract that are expected to increase the contract value up to its \$500 million maximum. The decision was already made to issue tasks under the contract for the design and development of the MESSENGER and STEREO spacecraft.

NASA officials told us they anticipate an ongoing need for general aerospace support from APL, and therefore intend to either extend the current contract or award a new follow-on sole source contract to APL to provide for the continuation of these services beyond May 2002.

¹ The Navy sponsors APL as a University Affiliated Research Center (UARC).

² NASA Contract NAS5-97271, known as the “general aerospace contract.”

³ We asked the cognizant NASA contracting officials why this exception to full and open competition was used for this first NASA contract to APL. They indicated that this exception was previously used by the Navy, so therefore it was considered appropriate for NASA since the Navy and NASA share similar needs for APL’s capabilities in the area of space systems.

⁴ Competitive procedures include selection under broad agency announcements (i.e., Announcements of Opportunity or NASA Research Announcements). The seven tasks awarded competitively to APL represent a total value of approximately \$109 million.

⁵ Of the 14 non-competitive tasks issued, 7 were awarded on the basis that APL was the only source capable of meeting the Agency’s requirements (pursuant to the authority of 10 U.S.C. 2304[c][1]). An additional four were awarded on the basis that the Agency’s need was of such an unusual and compelling urgency that the Government would have been seriously injured by openly competing it (pursuant to the authority of 10 U.S.C. 2304[c][2]). The remaining three were awarded on the basis that NASA needed to maintain essential capabilities at APL (pursuant to the authority of 10 U.S.C. 2304[c][3]). The 14 tasks awarded non-competitively to APL represent a total value of approximately \$26 million.

In addition to its general aerospace contract, NASA has also contracted with APL for the design and development of the TIMED spacecraft. Goddard awarded this contract to APL non-competitively on the basis that APL was the only responsible source capable of satisfying the Agency's requirements. The TIMED contract has a current value of \$106 million and is scheduled to end in February 2004.⁶ Finally, NASA also has 45 active grants in place with APL, representing a total value of approximately \$8.9 million.⁷

II. NAVY BUSINESS

Several NASA officials indicated that they believed that APL is experiencing a reduction in its work in support of the Navy. Because NASA and the Navy share a common interest in some of APL's essential capabilities in the area of space systems, this reduction may impact APL's ability to maintain essential capabilities important to NASA. However, this is inconsistent with information we obtained from the Navy Office of UARC Programs.⁸ Officials in this office indicated that while their funding of APL work decreased significantly in the late-1990's with the downsizing of the DoD budget, funding for APL is now increasing again.⁹ Navy officials also informed us that funding for APL under its contract would likely increase significantly if the decision were made to pursue research and development of DoD's strategic missile defense initiative.

III. COMMERCIAL BUSINESS

APL appears to be aggressively pursuing opportunities outside their previously established sources of Government funding. In a recent interview, APL's new director indicated that despite APL's not-for-profit status, he considers the Laboratory to be in a competitive environment and he is reorganizing APL to be able to withstand that competition.¹⁰

Indications of APL's success in repositioning itself for commercial opportunities are clear. For instance, through its technology transfer program, APL is licensing technology developed by the Laboratory to outside commercial partners.¹¹ [Information redacted from the original on July 13, 2000.]

⁶ The contract completion date of February 2004 is based on the current anticipated launch date of February 2001 with 3 years of post-launch mission operations and data analysis support.

⁷ Of the 45 active NASA grants in place with APL, 43 were awarded by Goddard, 1 was awarded by NASA's Langley Research Center, and 1 was awarded by NASA's Glenn Research Center.

⁸ This office is responsible for managing the Navy's UARC agreement and contract with APL.

⁹ Navy obligations decreased from approximately \$350 million in fiscal years 1994 and 1995 to a low of approximately \$250 million in fiscal year 1998. Projections for Navy spending at APL for fiscal year 2000 exceed \$300 million.

¹⁰ June 2000 issue of *The APL News*.

¹¹ Ibid.